

A PROBLEM ANALYSIS APPROACH TO DECISION-MAKING AND REPORTING FOR COMPLEX CASES

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This paper arose from the author's attempts to help trainee educational psychologists analyse and report their decision making in complex cases. Trainees appear to experience two main problems in this respect :

1. Difficulty in processing case details in a way that enables them to articulate their rationale for decisions about assessment and intervention.
2. Difficulty in "knowing how to write-up a case", i.e., in reporting their clinical decisions in a way that reveals their understanding of the case. In contrast, their reports frequently comprise descriptions of "actions taken" and "results obtained", leaving the reader to infer the rationale for the steps taken and the logic that connects the "Results" and "Recommendations" sections of the report.

Over the last three years, the author has attempted to address these difficulties by developing a problem analysis model to guide psychologists' decision-making and reporting.

This paper outlines some of the model's theoretical basis, its main features, and the implications of its use for oral and written reporting.

COMPLEX PROBLEMS AS ILL-STRUCTURED

Most clients referred to educational psychologists have complex, multi-dimensional problems. The initial assessment process can be difficult and time-consuming, because hundreds of different questions can be asked, and numerous different aspects of the case explored. Psychologists have neither the time nor the need to pursue all possibilities, so are often advised to limit their attention to the most relevant aspects of the referral. But talk of relevance at this early stage is unhelpful, because this advice presupposes that the psychologist already knows the nature of the problem.

Not only are psychologists unable to judge relevance at this early stage, but there is also uncertainty about what counts as an analysis or solution to such problems. Problems which are characterised by a lack of obvious solutions (or analyses), by multiple paths to such solutions, and by uncertainty about the relevance of information are termed ill-structured (Simon, 1973). Such problems can be contrasted with well-structured problems, such as those in algebra and logic where what counts

as a solution is obvious, the information needed to solve the problem is either given or readily available, and an algorithm exists that guarantees a correct solution if properly applied. Most personal problems are of the ill-structured variety "as are all the really important social, political and scientific problems in the world today" (Frederiksen, 1984, p.199).

THE ANALYSIS OF ILL-STRUCTURED PROBLEMS

The job of the psychologist is not to reflect back to clients the ill-structured and complex nature of their problems. It is to reduce their complexity by developing a model which transforms the details of the problem into a conceptual map which reveals the problem's key dimensions and their inter-relationships. How can psychologists complete this task?

Such problems can be understood by developing a series of hypotheses about the nature and causes of the problem. These hypotheses in turn indicate areas worthy of further exploration, the types of questions which are likely to produce evidence relevant to the hypotheses, and the criteria against which to evaluate the information obtained. The following example illustrates how the assessment process can be guided by a process of imposing a structure on the case details, and simultaneously testing its appropriateness.

A client in a rehabilitation agency is referred for periods of moodiness, during which she slows down in her work, then stops altogether. If no one has noticed her state, she then begins crying. The psychologist's experience and theoretical knowledge of applied behavior analysis is the source of an initial very general hypothesis. Perhaps the moody episodes are triggered by particular events in the work-place such as criticism or dislike of the current task, and are maintained by the reactions of the supervisor or workmates. This hypothesis focuses the psychologist's attention on the antecedents and consequences of the moody periods and leads to a series of critical incident interview questions and observations in the work group. Equally, the hypothesis serves to temporarily withdraw attention from other areas of potential relevance such as family support and self-esteem. The subsequent interview and observations both suggest that the supervisor responds to the moody episodes by attempting to "jolly her out of it", which may involve shifting her to a different task, placing her with work-mates who can help to cheer her up and talking with her about her concerns outside the work group.

Although these data confirm the hypothesis, the testing process is still incomplete, because disconfirming data have not yet been sought. The search for disconfirmation provides a rationale for obtaining information about the occurrence of moody episodes outside the work-group setting, and the antecedents and consequences of any such episodes. If they occur in many contexts, then a causal hypothesis that relies on supervisor

and peer reactions would seem at least insufficient, if not inaccurate.

Alternative hypotheses can also be generated by asking whether there are other plausible explanations of such episodes. At this point, the psychologist discovers from the client's records that she is taking a moderate dose of Tegretol (an anti-convulsive medication). This information triggers an additional hypothesis that guides a search for information about the medication's side effects, the relationship between the medication history and the moody episodes, and the date of the most recent medication review.

This example shows how users of a problem analytic approach gradually construct, test, refine, and reconstruct an analysis of the problem which suggests causal and associative relationships between the details of the case. This process contrasts markedly with an attempt to "find out everything about the case" or to passively absorb information in the hope that insights about the case will emerge once sufficient data are obtained. Information processing theory (Kail & Pellegrino, 1985) suggests that the latter strategy will lead to cognitive overload and increased difficulty in perceiving and encoding patterns in the case details. To avoid this, the collection and interpretation of data must proceed simultaneously, with the latter guiding psychologists' judgements about relevant and irrelevant lines of questioning.

The importance of hypothesis development, testing, and refinement is further suggested by some recent research on problem-solving in complex knowledge domains. Expert problem-solvers are distinguished from novices by their use of theory and principles to integrate apparently disparate features of the problem, to infer further information from what is given, and to make predictions (Chi, Feltovich & Glaser, 1981; Glaser, 1984). In short, experts reason about the problem, while novices remain tied to the surface features of the data. Similarly, in counseling, Claiborn (1982) has described the differing impact on clients of counselors who are tied to the clients' data and of those who can transform such data by making interpretations and disclosing them to the client.

There may be many different reasons why psychologists fail, in particular cases, to move beyond the surface features of a client's difficulties. They may under pressure of work simply not take the time to conceptualise the details of the case, and to ask themselves causal and integrative questions. Alternatively, they may lack relevant conceptual and theoretical principles which would enable them to see patterns in, and abstract from, the details of the case.

REPORTING OF PROBLEM ANALYSES

The argument so far, suggests that decisions about complex cases do not arise from some sort of neutral analysis of case details,

but reflect the way the case has been constructed by the psychologist. Such constructions can be contested, so a value of openness requires the clinician to make this construction explicit, including its underlying rationale, and reasons why the chosen model is believed to be preferable to other possible models.

The following section discusses the oral or written presentation of a problem analysis. Such a presentation can be made at any point in a psychologist's work with a case, and should be treated as both a way of exposing and of checking his or her current understanding of the referral. A problem analysis will be presented very differently depending on the purposes of the particular communication. For example, a problem analysis could be used to summarize an interview with a referral agent; as a structure for a case conference; as a letter to a parent or as a more formal assessment report. These various forms of communication demonstrate a problem analysis approach to the extent that they reveal the psychologist's understanding of the problem dimensions, and their inter-relationships.

The example presented in Appendix 1 illustrates the application of the problem analysis approach to the writing of a formal report intended for other psychologists. Following the initial referral paragraph, the problem analysis is presented in the first four sections entitled: Problem Dimensions; Statement of Priorities; Current Causes of Priority Dimensions; Recommended Next Steps (Appendix 1). Since this report is written after some of the recommendations have been implemented, a final section on Intervention and Follow-up is included.

The first section is organised to reflect the psychologist's understanding of how the case details reflect various problem dimensions. These dimensions form the section's sub-headings and may be quite different from those described during the initial referral. Under each sub-heading there is a brief description and a summary of all the data which supports the psychologist's identification of the dimension. Data from all sources (e.g., referral agent, client and teacher) and from all assessment methods used (e.g., interviews, observations and tests) are integrated underneath the relevant heading. This triangulation process (Denzin, 1978) helps the psychologist to integrate the various sources and types of data. In contrast, when data are presented under methodological headings (e.g., Teacher interview, Key Math assessment, and WISC-R) the audience are required to integrate the various sources and types of data and to infer how they support the psychologist's conclusions about problematic functioning.

The second section presents the psychologist's reasons for judging some dimensions as more important than others. Dimensions may be judged on the basis of their urgency, the client's priorities, the psychologist's hypotheses about causal relationships, or more frequently, some combination of the above. The process of prioritizing has important practical implications,

for it recognises limits to the psychologist's time and expertise. Recognition of these limits however should not prevent psychologists from giving high priority to dimensions which are beyond their expertise and which require referral to other agencies (Robinson & Peters, 1982).

The third section presents the psychologist's causal hypotheses about how the priority dimension(s) are maintained. These hypotheses should be supported by specific reference to case detail and to relevant theory. For example, if poor academic performance is selected as a priority dimension, the section on causes of the priority may suggest with evidence, why the teacher's instructional practices, including difficulty level of texts, are more important causes of poor performance than the alternative hypothesis of low ability level.

Causal factors are frequently difficult to ascertain in complex cases, so psychologists may prefer to omit this part of the analysis, and to move straight from identification of priority dimensions to the design of an intervention. The risk with such a strategy is that the behaviour or situation which is modified may not be causally related to the underlying problem. For example, a mildly retarded woman is referred for among other things, her social isolation. Priority is given to her lack of social skills and a sophisticated behavioural training programme completed. The woman's continued social isolation prompts the psychologist to make a more explicit analysis of causal factors. He concludes that while there were deficits in the area of initiation and sustaining of conversations, the woman is rejected by peers because of the sexually inappropriate content of some of her conversations, and that a completely different intervention is required.

The fourth section describes plans for further assessment and intervention including referral to other agencies. These plans should be justified with reference to arguments about causation and to relevant intervention research and theory.

The four sections of the report can be modified to suit other reporting purposes. For example, the 'Next Steps' section can be followed by a section headed 'Intervention and Follow-up' which describes the action taken for the priority dimensions of the problem, with accompanying results. If the intervention revealed that the initial problem analysis was inadequate in some way, a second 'Next Steps' section could be added.

THE QUALITY OF PROBLEM ANALYSES

Given that most complex cases are rich enough to provide support for everything but the most outrageous analyses (Arkes, 1981), important practical and theoretical questions arise about the quality of psychologists' analyses of their clients' problems. A model of problem analysis therefore requires in addition to

TABLE 1
Criteria for Judging the Quality of Problem Analyses

Section of Report	Criteria	Definitions of Criteria	Examples of Use of Criteria
A The Problem Dimensions	1. Accuracy	Problem dimensions are accurately identified when they are consistent with the facts of the case. Inaccuracy may arise from over-generalisation, or speculative inference.	Inaccuracy arising from speculative inference . A psychologist infers without supporting data that because a client has few friends and social contacts that "being lonely" is one of his problems.
	2. Completeness	Completeness is present when all major problem dimensions are identified even though the way they are labelled and described may differ from the language used by others.	Incompleteness arising from omission of a major dimension. . A client comes for help in making a decision about quitting his job. He is having difficulty sleeping, is feeling low and anxious and his difficulties at work are dominating his thinking. The report writer does not include stress as a dimension of his problem.
	3. Clarity	Clarity is a quality of orderliness in which main ideas are both high-lighted and readily understood. Clarity can be achieved by the use of self-explanatory headings or phrases, or by the inclusion of examples. Unclearness can result from confused writing, from the inclusion of irrelevant detail or from generating a long repetitive list.	Unclearness resulting from ambiguous headings . "Restricted job choice". Does this mean that the client has a restricted choice because of the few vacancies available in her area, because of her qualifications and experience, or because she is unnecessarily restricting her search?
B Relative Importance of Problem Dimensions	4. Soundness of Argument for Priorities	This criterion refers to the quality of arguments presented to support the psychologist's own priorities. Sound arguments are consistent with good clinical knowledge and practice and consistent with case evidence. Arguments can also be strengthened by explicitly identifying and replying to alternative priorities.	Soundness arising from arguments about urgency . If the client does not get some immediate relief from stress symptoms (e.g., not sleeping) these are likely to interfere with his ability to make and carry out decisions about his future career.

C	Causes of the Priority Dimension	5. Soundness of Argument for Causes of Priority	<p>A sound argument is defined under (4)</p> <p>Unsoundness arising from inconsistency with and lack of support from case evidence</p> <ul style="list-style-type: none"> The client's current difficulties are caused by his low commitment to teaching. Until he's sure he wants to be a teacher they are likely to continue. It may be that he is just not suited to teaching. <p>There is no evidence that the client's commitment to teaching was any greater the previous year when he was not having difficulties. The final statement requires supporting evidence.</p>
D	Next Steps	6. Specificity	<p>Lack of specificity</p> <ul style="list-style-type: none"> I would help the client to work on his classroom management problems.
		7. Appropriateness	<p>Inappropriateness due to failure to consider causal relationships</p> <ul style="list-style-type: none"> It does not make good clinical sense to ask a client to go away and decide the type of job they would prefer, when there is considerable evidence that being unable to decide is a central aspect of the client's problem.
		8. Completeness	<p>Incompleteness</p> <ul style="list-style-type: none"> The client is regularly humiliated by the chaos in his class which other teachers do not experience. The psychologist has argued that the client is mildly depressed and highly unsure of his career choice. He recommends a visit to his doctor to get medication and a visit to a P.P.T.A. counsellor to discuss other types of job. <p>These steps are incomplete in that they do not address the immediate problem of the class being out of control and the humiliation the client feels as a consequence. This regular humiliation contributes to the depression and makes a reasoned consideration of career options extremely difficult for him.</p>

a format for reporting, some evaluation of the quality of the analysis. Table 1 presents several criteria which have been used to discriminate degrees of quality under conditions where there is no one correct conceptualisation of the problem. The criteria were developed as part of a research programme on the skills involved in the construction of high quality analyses (Robinson & Halliday, 1985).

Glaser's (1984) work on the cognitive representation of ill-structured problems provided the conceptual basis for the criteria of quality. He defines a high quality analysis as accurate (true to the facts of the case), complete and coherent. A coherent analysis transforms the case details in a way that suggests the problem's key dimensions and their inter-relationships (Glaser, 1984, p.98).

Table 1 presents a brief summary of the criteria, along with definitions and examples of their use.

DISCUSSION AND IMPLICATIONS

The problem analysis model is open to the criticism that it overemphasises a client's deficits at the expense of information about a child's competencies. The inclusion of positive information for the purpose of providing "a balanced picture" is not consistent with the model because its underlying rationale is to promote understanding of specific difficulties and not to make overall judgements, whether balanced or not, about the client.

There are however, several ways in which information about competencies might be relevant to the problem analysis. First, many clients' difficulties relate to their progress along a developmental or learning sequence and precise specification of their problems involves investigation of the points at which their competencies break down. The boundary between competence and incompetence often provides the starting point for intervention.

Second, information about a client's competencies can modify or disconfirm hypotheses about problem dimensions. One way to test a teacher's belief that a child is "irresponsible" for example, is to search for settings and occasions on which the child might show responsibility. In this way a highly generalised problem dimension such as "Irresponsibility" may be replaced by a more specific heading such as "Behaviour Problems at School".

Third, information about a client's competencies may be reported as part of the psychologist's arguments about causal relationships. For example, information about a child's accurate understanding of relevant maths concepts may be reported in support of an argument that her low accuracy rates are caused by the

teacher's reinforcement of worksheet completion and not by the child's misunderstanding of relevant maths concepts.

The preparation of a problem analysis report is probably more difficult than preparation of a report which is structured around the actions taken and the evidence obtained. The extra effort should be worthwhile however, because the conceptualisation process will help psychologists to restrict their assessment and intervention activities to those which can most efficiently and effectively address a client's difficulties. A high quality problem analysis report can also provide others with an opportunity to test their views against those of the psychologist and to develop a joint understanding of and responsibility for the case (Argyris, 1982).

While research has established the reliability of the measures of problem analysis quality and has begun to identify some of the skills associated with high quality analyses, more applied research is still needed (Robinson & Halliday, 1985). One critical issue is the relative acceptability to both psychologists and clients, of the problem analysis model and traditional forms of report (Pryzwansky & Hanania, 1986). A second issue concerns the extent to which psychologists will need new skills in order to think about and report their clinical work in the manner suggested. The skill of being able to simultaneously construct and seek to disconfirm an analysis of a client's problem(s) is critical to the effective application of the problem analysis model (Schon, 1983). These and other relevant skills are discussed at greater length in Robinson and Halliday (1987, in press).

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APPENDIX 1

AN EXAMPLE OF THE APPLICATION OF THE PROBLEM ANALYSIS APPROACH
TO A FORMAL CASE REPORTREFERRAL BACKGROUND

T. is a 13 year old Niuean New Zealander who was referred to Psychological Service for severely disruptive and aggressive behaviour both in the classroom and the playground.

DIMENSIONS OF THE PROBLEM

1. Supervision and care at home. T. and his brother (4 years) live with their mother (Mrs.P.) who currently works from approximately 7 a.m. until 9.30 p.m. at two different jobs. Mrs. P. reports that her mother cares for the children at home while she is away, but adds that she can only speak Niuean and has no control over the children. When asked about the possibility of giving up her second job and accepting family support if she required it, Mrs. P. stated that she liked her job and that T. would do what he liked anyway. She indicated that she would not be prepared to help with any behaviour change programme, and that it would be best if T. went into some form of residential care. (Interview with mother, 7.3.87).

The Niuean social worker reports that grandmother is partially deaf, has poor vision, and is too old to care for the children. Grandmother reported to the social worker that another male occasionally stayed in the house and that he "severely disciplined" T. (Case notes, 17.3.87).

T. comes home from school about 5 p.m. and frequently "disappears" during the day at weekends. T. says he spends most of his time "playing spacies" down the shops. (Interview with T. 10.3.87).

2. Health. T. has a record of poor health and hospitalisation, mainly centred around breathing and eyesight difficulties. The public health nurse is concerned about his eyes and his diet. (Interview with public health nurse, 10.3.87).
3. Aggressiveness. The principal reports episodes of highly aggressive behaviour including hitting, kicking, throwing furniture, demanding food and money from other children and fighting. These episodes occurred from eight to ten times a week, and as a result, two parents had kept their children home and were threatening to remove them permanently from the school.

During my playground observations T. annoyed other children by interrupting games, squirting water, and by grabbing,

hitting, kicking and punching other children. While no major fights occurred, many children became extremely agitated by T's attention and tried to avoid him. (Observations made 27.2.87). T. said that he often became angry because children made comments about his hair, which is worn in two plaits in the traditional Niuean style. He said he would like his hair cut but then refused permission for the Niuean social worker to approach his mother on the subject. (Interview with T. 20.3.87).

In contrast with these behaviours, T. was satisfactorily employed on a Herald paper round and delivered advertising material once a week after school.

4. Classroom work and behaviour. T. spent little time on his school work. He arrived at school between 10 and 11 a.m. three to four times a week and returned to class late after breaks. He had completed four pieces of work to date in contrast to the 20 completed by his classmates and during a one hour classroom observation was on-task for approximately 20 seconds (Observation made 27.2.87). During the same period he ignored 6 out of 7 teacher instructions which were directed to him in a quiet and polite manner. The teacher reported that at times his non-compliance was accompanied by verbal abuse and violence, such that five staff now refused to supervise him.
5. Academic performance. T. co-operated with the individual assessments I made, and in general functioned 2-3 years below his chronological age. (Assessments made 10-11.3.87). He was reading at a 10 year old level (Neale Analysis: Accuracy 10y; Comprehension 9y 3m; Burt Word Reading Test: 10y-10.06). T. was also performing 2-3 years below his chronological age in mathematics (Key Maths).

Given the amount of time spent out of class or off-task, and in view of his social difficulties, these results would suggest T. has a good capacity to learn. This impression was confirmed by the deputy principal who was working with T. on a withdrawal basis, and who noted that he quickly mastered new concepts and procedures. T's teacher agreed that the curriculum in his current class did not challenge him, since it was designed for the many E.S.L. children present. She was uncertain of his level however, since he produced so little work for her.

STATEMENT OF PRIORITIES

1. T's aggression is a matter of urgency, since school personnel and peers may be harmed by T. and from T's perspective, school is becoming an environment where he can not engage constructively with either his school work or with people. Until his anti-social behaviours are more under control, he will have few opportunities to work on appropriate

academic tasks, and to discover satisfactions from his work or from being with others.

2. T's health should be investigated as soon as possible.
3. Attempts to intervene at home are a lower priority because at present, Mrs P. is either unable or unwilling to co-operate. In designing treatment options however, it is important to recognise that T. has inadequate care and may be at risk of physical harm at home.

POSSIBLE CURRENT CAUSES

It is impossible to make definitive statements about the causes of T's anti-social behaviour. Currently however, T. is involved in primarily aversive interactions and experiences few opportunities for the development of a sense of self-worth. At school, both peers and adults may unwittingly reinforce his aggression, through avoidance, giving in to his threats, and behaving like victims (Patterson, 1986). Paradoxically, this power over others may provide T. with a strange sense of being in control. Furthermore, he may have been exposed to numerous models of aggressive and anti-social behaviour both at home and on the streets. Unfortunately, neither the Niuean social worker nor I were able to establish the kind of relationship with T. in which he was able to talk about his feelings about himself, his home or his school. This remains a major gap in this analysis.

PLANNED NEXT STEPS

The following recommendations were made by me to a case conference held on March 30, 1987, attended by the Visiting Teacher, D.S.W. social worker, Public Health Nurse, Medical Officer of health, T's classroom teacher and school principal and by my Senior Psychologist.

1. Full medical assessment.
2. Referral to Waimokoia which could provide a stable environment in which T. could develop responsible positive interactions with others, and at the same time remain in regular contact with his home and local school.
3. Negotiate for T. to be placed in a class where he will receive a curriculum which is better matched to his abilities, during his time in the local school.
4. Begin long-term planning for secondary placement in 1988.

INTERVENTION AND FOLLOW-UP

1. The medical assessment confirmed the existence of the symptoms but did not locate the causes or reveal any pathology. (Dept. of Health Report, 18.3.87).
2. Mother agreed to the referral to Waimokoia but refused to provide the support required, so the application was declined. Subsequent visits by myself and the social worker, and a trip with mother to Waimokoia, resulted in her agreement to the conditions and T's eventual acceptance on 28.4.87.
3. T. has moved progressively from a seven day week at Waimokoia, to 4 days at Waimokoia and 3 at home. Waimokoia reports 2 or 3 incidents of minor inappropriate behaviour, and completion by T. of numerous academic tasks. The principal and teacher of the local school have made similar observations about T's progress and report major changes in his health and demeanour (9.6.87).

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Note: This report was written by Geoff Williams and Viviane Robinson based on casework done by Geoff Williams.